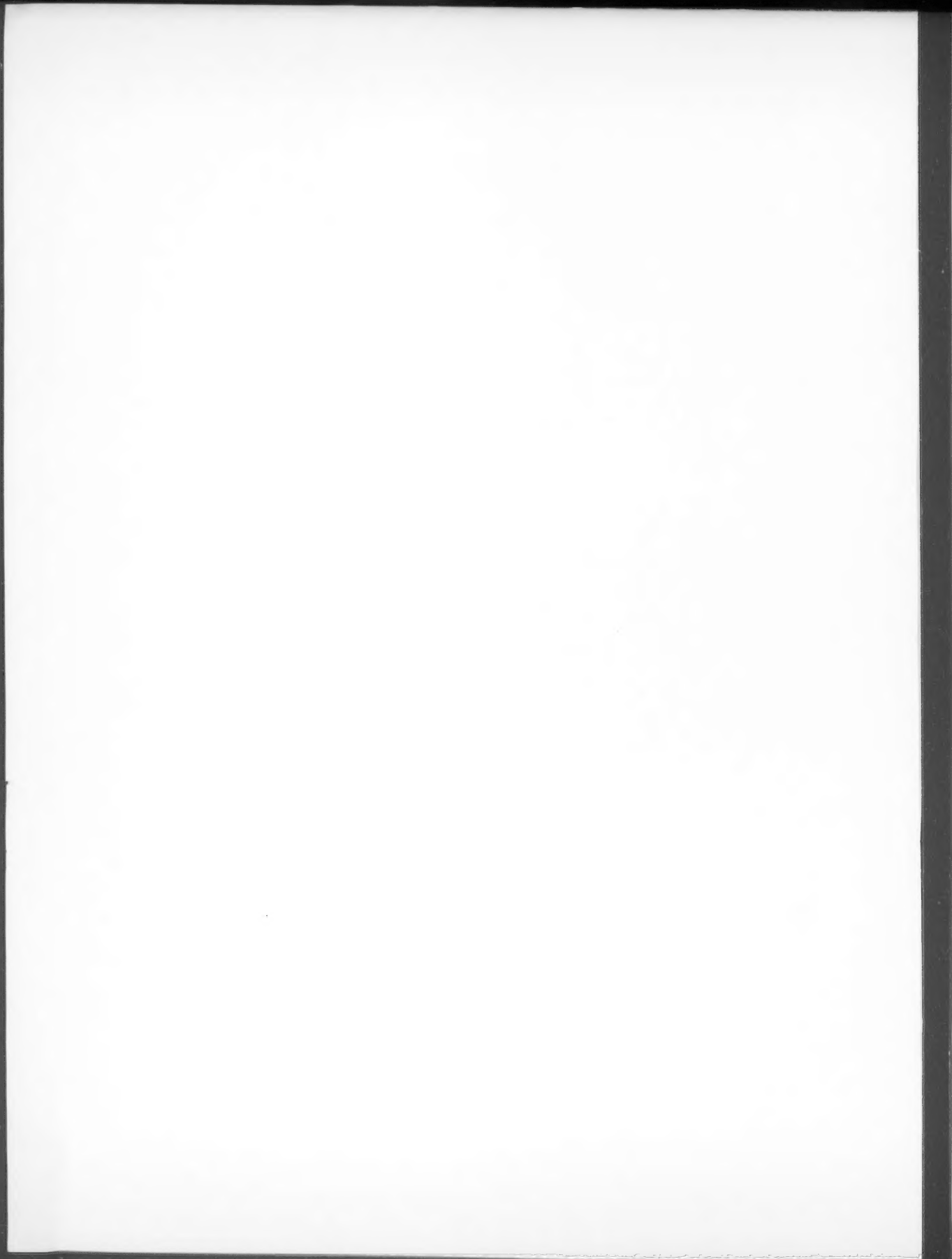


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0130	Physics literature and publications	0400	RELATIVITY AND GRAVITATION
0130B	<i>Publications of lectures (advanced institutes, summer schools, etc.)</i>	0420	General relativity
0130C	<i>Conference proceedings</i>	0430	Gravitational waves and radiation: theory
0130E	<i>Monographs, and collections</i>	0440	Continuous media; electromagnetic and other mixed gravitational systems
0130K	<i>Handbooks and dictionaries</i>	0450	Unified field theories and other theories of gravitation
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0130N	<i>Textbooks</i>	0465	Supergravity
0130Q	<i>Reports, dissertations, theses</i>	0480	Experimental tests of general relativity and observations of gravitational radiation
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0200	MATHEMATICAL METHODS IN PHYSICS	0570	Thermodynamics
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0230	Function theory, analysis	0620	Metrology
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0250	Probability theory, stochastic processes, and statistics	0620F	<i>Units</i>
0260	Numerical approximation and analysis	0620H	<i>Measurement standards and calibration</i>
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0300	CLASSICAL AND QUANTUM PHYSICS; MECHANICS AND FIELDS	0630C	<i>Spatial variables measurement</i>
0320	Classical mechanics of discrete systems: general mathematical aspects	0630E	<i>Mass and density measurement</i>
0330	Special relativity	0630F	<i>Time and frequency measurement</i>
0340	Classical mechanics of continuous media: general mathematical aspects	0630G	<i>Velocity, acceleration and rotation measurement</i>
0340D	<i>Mathematical theory of elasticity</i>	0630L	<i>Measurement of basic electromagnetic variables</i>
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0350	Classical field theory	0660	Laboratory techniques
		0670	General instrumentation
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<sup>1</sup>The permission of the ICSU-AB, Paris, for the Canadian Journal of Physics to use this subject classification is gratefully acknowledged.

- 0700 SPECIFIC INSTRUMENTATION AND TECHNIQUES OF GENERAL USE IN PHYSICS
- 0710 Mechanical instruments and measurement methods
- 0720 Thermal instruments and techniques
- 0720D *Thermometry*
- 0720F *Calorimetry*
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- 0720K *High-temperature techniques and instrumentation; pyrometry*
- 0720M *Cryogenics*
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- 0730 Vacuum production and techniques
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- 0730D *Vacuum meters and measuring techniques*
- 0735 High pressure production and techniques
- 0750 Electrical instruments and techniques
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- 0762 Detection of radiation (bolometers, photoelectric cells, i.r. and submillimetre waves detection)
- 0765 Optical spectroscopy and spectrometers
- 0765E *UV and visible spectroscopy and spectrometers*
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- 0768 Photography, photographic instruments and techniques
- 0775 Mass spectrometers and mass spectrometry techniques
- 0777 Particle beam production and handling; targets
- 0780 Electron and ion microscopes and techniques
- 0785 X-ray, gamma-ray instruments and techniques
- 0790 Other topics in specialized instrumentation
- 1000 THE PHYSICS OF ELEMENTARY PARTICLES AND FIELDS
- 1100 GENERAL THEORY OF FIELDS AND PARTICLES
- 1110 Field theory
- 1117 Theories of strings and other extended objects
- 1120 S-matrix theory
- 1130 Symmetry and conservation laws
- 1140 Currents and their properties
- 1150 Dispersion relations and sum rules
- 1160 Complex angular momentum; Regge formalism
- 1180 Relativistic scattering theory
- 1190 Other topics in general field and particle theory
- 1200 SPECIFIC THEORIES AND INTERACTION MODELS; PARTICLE SYSTEMATICS
- 1210 Unified field theories and models
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- 1220D *Specific calculations and limits of quantum electrodynamics*
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- 1225 Models for gravitational interactions
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- 1235 Composite models of particles
- 1235C *General properties of quantum chromodynamics (dynamics, confinement, etc.)*
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- 1235H *Phenomenological composite models of particle structure and reactions (partons, bags, etc.)*
- 1235K *Other composite models*
- 1240 Models of strong interactions
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- 1300 SPECIFIC REACTIONS AND PHENOMENOLOGY
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- 1375G *Pion-baryon interactions (energy  $\leq 10$  GeV)*

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 1380 Photon-photon interactions and scattering  
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- 2300 RADIOACTIVITY AND ELECTROMAGNETIC TRANSITIONS  
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- 2500 NUCLEAR REACTIONS AND SCATTERING: SPECIFIC REACTIONS  
 2510 Nuclear reactions and scattering involving few-nucleon systems  
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 2580 Meson- and hyperon-induced reactions and scattering  
 2585 Fission reactions  
 2588 Fusion reactions  
 2590 Other topics in nuclear reactions and scattering: specific reactions
- 2700 PROPERTIES OF SPECIFIC NUCLEI LISTED BY MASS RANGES  
 2710  $A \leq 5$   
 2720  $6 \leq A \leq 19$   
 2730  $20 \leq A \leq 38$   
 2740  $39 \leq A \leq 58$   
 2750  $59 \leq A \leq 89$   
 2760  $90 \leq A \leq 149$   
 2770  $150 \leq A \leq 189$   
 2780  $190 \leq A \leq 219$   
 2790  $220 \leq A$
- 2800 NUCLEAR ENGINEERING AND NUCLEAR POWER STUDIES  
 2820 Neutron physics  
 2841 Fission reactor theory and design  
 2842 Fission reactor materials  
 2842H *Fuel preparation and reprocessing*  
 2843 Fission reactor operation  
 2844 Fission reactor protection systems, safety and accidents  
 2846 Nuclear materials: safety aspects  
 2846C *Safeguards*  
 2846E *Criticality safety*  
 2846G *Packaging and transportation*  
 2847 Fission reactor decommissioning  
 2850 Fission reactor types and applications  
 2852 Fusion reactors  
 2858 Integrated reactor systems  
 2870 Nuclear explosions  
 2875 Radioactive waste, transportation, disposal, storage, treatment  
 2880 Radiation technology, including shielding  
 2890 Other topics in nuclear engineering and nuclear power studies

- 2900 EXPERIMENTAL METHODS AND INSTRUMENTATION FOR ELEMENTARY-PARTICLE AND NUCLEAR PHYSICS
- 2910 Preacceleration (injection)
- 2915 Electrostatic and linear particle accelerators
- 2920 Cyclic accelerators and storage facilities
- 2925 Particle sources and targets, preparation and technology
- 2930 Radiation spectrometers and spectroscopic techniques
- 2940 Radiation detectors
- 2940W *Solid-state nuclear track detectors*
- 2960 Counting circuits and nuclear electronics
- 2970 Radiation measurement, detection and counting
- 2975 Polarization analysis
- 2980 Nuclear information processing
- 2990 Other topics in high-energy and nuclear experimental methods and instrumentation
- 3000 ATOMIC AND MOLECULAR PHYSICS
- 3100 THEORY OF ATOMS AND MOLECULES
- 3110 General theory of structure, transitions and chemical binding
- 3115 General mathematical and computational developments
- 3120 Specific calculations and results
- 3120D *Complete ab initio calculations (exact or nearly exact calculations on small species)*
- 3120E *Ab initio LCAO and CO SCF calculations*
- 3120G *Other accurate or nearly ab initio calculations*
- 3120H *X-alpha methods*
- 3120J *Local density approximation*
- 3120L *Other statistical model calculations (Thomas-Fermi and Thomas-Fermi-Dirac models)*
- 3120N *Semi-empirical NDO calculations (CNDO, INDO, MINDO, PCILLO methods, etc.)*
- 3120P *Other semi-empirical calculations (Hückel, generalized Hückel, PPP methods, etc.)*
- 3120R *Valence bond calculations (ab initio or not)*
- 3120T *Electron correlation and CI calculations*
- 3120W *Empirical methods (nonquantum methods for conformations)*
- 3130 Electronic structure, corrections and effects of interactions
- 3130G *Hyperfine interactions and isotope effects*
- 3130J *Radiative and relativistic effects*
- 3130L *Environmental and solvent effects*
- 3130N *Molecular solids*
- 3150 Excited states
- 3190 Other topics in the theory of atoms and molecules
- 3200 ATOMIC SPECTRA AND INTERACTIONS WITH PHOTONS
- 3220 Atomic spectra grouped by wavelength ranges
- 3220D *Radiofrequency and microwave spectra*
- 3220F *Infrared and Raman spectra*
- 3220J *Visible and ultraviolet spectra*
- 3220R *X-ray spectra*
- 3240 Magnetic resonance spectra
- 3250 Fluorescence, phosphorescence; radiationless transitions
- 3250F *Fluorescence, phosphorescence*
- 3250H *Radiationless transitions*
- 3260 Magneto-optical and electro-optical spectra
- 3260S *Stark effect*
- 3260V *Zeeman effect*
- 3270 Spectral line shapes and intensities
- 3280 Photon interactions with atoms
- 3280B *Level crossing, optical pumping, population inversion, stimulated emission*
- 3280D *Autoionization*
- 3280F *Photoionization, photodetachment, photoelectron spectra*
- 3280H *Auger effect and inner-shell ionization*
- 3280K *Multiphoton processes*
- 3280P *Optical cooling of atoms; trapping*
- 3290 Other topics in atomic spectra and interactions with photons
- 3300 MOLECULAR SPECTRA AND INTERACTIONS WITH PHOTONS
- 3310 Calculation of molecular spectra
- 3320 Molecular spectra grouped by wavelength ranges
- 3320B *Radiofrequency and microwave spectra*
- 3320E *Infrared spectra*
- 3320F *Raman and Rayleigh spectra*
- 3320K *Visible spectra*
- 3320L *Ultraviolet spectra*
- 3320N *Vacuum ultraviolet spectra*
- 3320R *X-ray spectra*
- 3325 Nuclear magnetic resonance and relaxation; nuclear quadrupole resonance (NQR)
- 3330 Electron paramagnetic resonance and relaxation
- 3335 Double resonances and other multiple resonances
- 3335H *MODR and PMDR (microwave optical double resonance and phosphorescence microwave double resonance)*
- 3340 Mössbauer spectra
- 3345 Magneto-optical and electro-optical effects; birefringence, dichroism and optical activity
- 3345B *Zeeman and Stark effects*
- 3345C *Magnetic circular dichroism*
- 3350 Fluorescence, phosphorescence; radiationless transitions (intersystem crossing, internal conversion)
- 3350D *Fluorescence and phosphorescence spectra*
- 3350H *Radiationless transitions*
- 3365 Photoelectron spectra
- 3370 Intensities and shapes of molecular spectral lines and bands
- 3380 Photon interactions with molecules
- 3380B *Level crossing, optical pumping, population inversion, stimulated emission*
- 3380E *Autoionization, photoionization, and photodetachment*
- 3380G *Diffuse spectra; predissociation, photodissociation*
- 3380K *Multiphoton processes*
- 3380P *Optical cooling of molecules; trapping*
- 3390 Other topics in molecular spectra and

- interactions with photons
- 3400 ATOMIC AND MOLECULAR COLLISION PROCESSES AND INTERACTIONS
- 3410 General theories and models
- 3420 Interatomic and intermolecular potentials and forces
- 3425 Intramolecular energy transfer; intramolecular dynamics; dynamics of van der Waals molecules
- 3430 Potential energy surfaces for collisions
- 3440 Elastic scattering of atoms and molecules
- 3450 Inelastic scattering of atoms and molecules
- 3450E *Rotational and vibrational energy transfer*
- 3450H *Electronic excitation and ionization (inc. beam-foil excitation and ionization)*
- 3450L *Chemical reactions, energy disposal, and angular distribution, as studied by atomic and molecular beams*
- 3450R *Laser-modified scattering*
- 3470 Charge transfer
- 3480 Electron scattering, electron spectra
- 3480B *Elastic scattering of electrons by atoms and molecules*
- 3480D *Atomic excitation and ionization by electron impact*
- 3480G *Molecular excitation, ionization, and dissociation by electron impact*
- 3480Q *Laser-modified scattering*
- 3490 Other topics in atomic and molecular collision processes and interactions
- 3500 PROPERTIES OF ATOMS AND MOLECULES; INSTRUMENTS AND TECHNIQUES
- 3510 Atoms
- 3510B *Atomic masses, mass spectra, abundances, and isotopes*
- 3510D *Electric and magnetic moments, polarizability*
- 3510F *Fine- and hyperfine-structure constants*
- 3510H *Ionization potentials, electron affinities*
- 3510W *Weak interactions*
- 3520 Molecules
- 3520B *General molecular conformation and symmetry; stereochemistry*
- 3520D *Interatomic distances and angles*
- 3520G *Bond strengths, dissociation energies, hydrogen bonding*
- 3520J *Barrier heights (internal rotation, inversion); rotational isomerism, conformational dynamics*
- 3520M *Electric and magnetic moments (and derivatives), polarizability, and magnetic susceptibility*
- 3520P *Rotation, vibration, and vibration-rotation constants*
- 3520S *Hyperfine and fine-structure constants*
- 3520V *Ionization potentials, electron affinities, molecular core binding energy*
- 3520W *Weak interactions*
- 3520X *Mass spectra*
- 3520Y *Correlation times in molecular dynamics*
- 3580 Atomic and molecular measurements and techniques
- 3580B *Time-resolved measurements and techniques*
- 3600 STUDIES OF SPECIAL ATOMS AND MOLECULES
- 3610 Exotic atoms and molecules (containing mesons, muons, and other abnormal particles)
- 3620 Macromolecules and polymer molecules
- 3640 Atomic and molecular clusters
- 3690 Other special atoms and molecules
- 4000 CLASSICAL AREAS OF PHENOMENOLOGY
- 4100 ELECTRICITY AND MAGNETISM; FIELDS AND CHARGED PARTICLES
- 4110 Classical electromagnetism
- 4110D *Electrostatics, magnetostatics*
- 4110F *Steady-state electromagnetic fields; electromagnetic induction*
- 4110H *Electromagnetic waves: theory*
- 4170 Particles in electromagnetic fields: classical aspects
- 4180 Particle beams and particle optics
- 4180D *Electron beams and electron optics*
- 4180G *Ion beams and ion optics*
- 4190 Other topics in electricity and magnetism
- 4200 OPTICS
- 4210 Propagation and transmission in homogeneous media
- 4220 Propagation and transmission in inhomogeneous media
- 4230 Optical information, image formation and analysis
- 4240 Holography
- 4250 Quantum optics
- 4252 Masers
- 4255 Lasing processes
- 4255B *General theory of lasing action*
- 4255D *CO<sub>2</sub> lasers*
- 4255F *Inert gas lasers*
- 4255G *Excimer lasers*
- 4255H *Lasing action in other gas lasers*
- 4255K *Chemical lasers*
- 4255M *Lasing action in liquids and organic dyes*
- 4255N *Fibre lasers and amplifiers*
- 4255P *Lasing action in semiconductors with junctions*
- 4255Q *Laser-active defect centres in solids*
- 4255R *Lasing action in other solids*
- 4255T *Free electron lasers*
- 4255V *High energy lasing processes (e.g. gamma and X-ray lasers)*
- 4260 Laser systems and laser beam applications
- 4260B *Design of specific laser systems*
- 4260D *Laser resonators and cavities*
- 4260F *Laser beam modulation, pulsing and switching; mode locking and tuning*
- 4260H *Laser beam characteristics and interactions*
- 4260K *Laser beam applications*
- 4265 Nonlinear optics
- 4265C *Stimulated Raman scattering and spectra;*

- CARS; *stimulated Brillouin and stimulated Rayleigh scattering and spectra*
- 4265F *Phase conjugation*
- 4265G *Optical transient phenomena, self-induced transparency, optical saturation and related effects*
- 4265J *Beam trapping, self focusing, thermal blooming, and related effects*
- 4265K *Harmonic generation, frequency conversion, parametric oscillation and amplification*
- 4265M *Multiwave mixing*
- 4265P *Optical bistability, multistability and switching*
- 4270 *Optical materials*
- 4270C *Glass*
- 4270G *Light-sensitive materials*
- 4272 *Optical sources and standards*
- 4278 *Optical lens and mirror systems*
- 4278H *Coatings*
- 4280 *Optical devices, techniques and applications*
- 4280B *Spatial filters, zone plates*
- 4280C *Spectral and other filters*
- 4280D *Monochromators*
- 4280E *Shutters, windows, diaphragms, deflectors, choppers, and optical scanners*
- 4280F *Gratings, echelles*
- 4280K *Optical beam modulators*
- 4280L *Optical waveguides and couplers*
- 4280Q *Image detectors, converters, and intensifiers*
- 4280R *Gradient-index (GRIN) devices*
- 4280S *Optical communications devices*
- 4280W *Ultrafast optical techniques*
- 4281 *Fibre optics and fibre waveguides*
- 4281B *Fibre fabrication, cladding, splicing, joining*
- 4281C *Fibre testing and measurement of fibre parameters*
- 4281H *Gradient-index (GRIN) fibre devices and techniques*
- 4281M *Fibre couplers and connectors*
- 4281P *Fibre optic sensors; fibre gyros*
- 4281W *Other fibre optical devices and techniques*
- 4282 *Integrated optics*
- 4285 *Optical testing and workshop techniques*
- 4290 *Other topics in optics*
- 4300 **ACOUSTICS**
- 4320 *General linear acoustics*
- 4325 *Nonlinear acoustics and macrosonics*
- 4328 *Aeroacoustics and atmospheric sound*
- 4330 *Underwater sound*
- 4335 *Ultrasonics, quantum acoustics, and physical effects of sound*
- 4340 *Structural acoustics and vibration*
- 4345 *Statistical studies of acoustical response*
- 4350 *Noise, its effects and control*
- 4355 *Architectural acoustics*
- 4360 *Acoustic signal processing*
- 4363 *Acoustic holography*
- 4370 *Speech communication*
- 4375 *Music and musical instruments*
- 4385 *Acoustical measurements and instrumentation*
- 4388 *Transduction; devices for the generation and reproduction of sound*
- 4390 *Other topics in acoustics*
- 4400 **HEAT FLOW, THERMAL AND THERMODYNAMIC PROCESSES**
- 4410 *Heat conduction (models, phenomenological description)*
- 4425 *Convection*
- 4430 *Heat transfer in inhomogeneous media and through interfaces*
- 4440 *Heat radiation*
- 4450 *Thermal properties of matter (phenomenology)*
- 4460 *Thermodynamic processes (phenomenology)*
- 4490 *Other topics in heat flow, thermal and thermodynamic processes*
- 4600 **MECHANICS, ELASTICITY, RHEOLOGY**
- 4610 *Mechanics of discrete systems*
- 4620 *Continuum mechanics*
- 4630 *Mechanics of solids*
- 4630C *Elasticity*
- 4630J *Viscoelasticity, plasticity, viscoplasticity, creep, and stress relaxation*
- 4630L *Buckling and instability*
- 4630M *Vibrations, aeroelasticity, hydroelasticity, mechanical waves, and shocks*
- 4630N *Fracture mechanics, fatigue, and cracks*
- 4630P *Friction, wear, adherence, hardness, mechanical contacts*
- 4630R *Measurement methods and techniques*
- 4660 *Rheology of fluids and pastes*
- 4690 *Other topics in mechanics, elasticity, and rheology*
- 4700 **FLUID DYNAMICS**
- 4710 *General theory, simulation and other computational methods*
- 4715 *Laminar flows*
- 4715C *Laminar boundary layers*
- 4715F *Stability of laminar flows*
- 4720 *Hydrodynamic stability and instability*
- 4725 *Turbulent flows, convection, and heat transfer*
- 4725C *Isotropic turbulence*
- 4725F *Boundary layer and shear turbulence*
- 4725J *Turbulent diffusion*
- 4725M *Noise (turbulence generated)*
- 4725Q *Convection and heat transfer*
- 4725R *Wakes*
- 4730 *Rotational flow, vortices, buoyancy and other flows involving body forces*
- 4735 *Waves*
- 4740 *Compressible flows; shock and detonation phenomena*
- 4740D *General subsonic flows*
- 4740H *Transonic flows*
- 4740K *Supersonic and hypersonic flows*
- 4740N *Shock-wave interactions*
- 4745 *Rarefied gas dynamics*
- 4750 *Non-Newtonian dynamics*
- 4755 *Nonhomogeneous flows*
- 4755B *Cavitation*
- 4755C *Jets*
- 4755E *Nozzles*
- 4755H *Stratified flows*

- 4755K *Multiphase flows*  
 4755M *Flow through porous media*  
 4760 Flows in ducts, channels, and conduits  
 4765 Magnetohydrodynamics and electrohydrodynamics  
 4770 Reactive, radiative, or nonequilibrium flows  
 4775 Relativistic fluid dynamics  
 4780 Instrumentation for fluid dynamics  
 4790 Other topics in fluid dynamics
- 5000 **FLUIDS, PLASMAS AND ELECTRIC DISCHARGES**
- 5100 KINETIC AND TRANSPORT THEORY OF FLUIDS; PHYSICAL PROPERTIES OF GASES  
 5110 Kinetic and transport theory  
 5120 Viscosity and diffusion: experimental  
 5130 Thermal properties of gases  
 5140 Acoustical properties of gases; ultrasonic relaxation  
 5150 Electrical phenomena in gases  
 5160 Magnetic phenomena in gases  
 5170 Optical phenomena in gases  
 5190 Other topics in the physics of fluids
- 5200 THE PHYSICS OF PLASMAS AND ELECTRIC DISCHARGES  
 5220 Elementary processes in plasma  
 5220F *Electron collisions*  
 5220H *Atomic, molecular, ion and heavy particle collisions*  
 5225 Plasma properties  
 5225F *Transport properties*  
 5225P *Emission, absorption, and scattering of radiation*  
 5230 Plasma flow; magnetohydrodynamics  
 5235 Waves, oscillations, and instabilities in plasma  
 5235R *Plasma turbulence*  
 5235T *Shock waves*  
 5240 Plasma interactions  
 5240D *Electromagnetic wave propagation in plasma*  
 5240F *Antennas in plasma; plasma-filled wave guides*  
 5240H *Solid-state plasma interactions*  
 5240K *Sheaths*  
 5240M *Particle beam interactions in plasma*  
 5250 Plasma production and heating  
 5250J *Plasma production and heating by laser beams*  
 5250L *Plasma production and heating by shock waves and compression*  
 5255 Plasma equilibrium and confinement  
 5260 Relativistic plasma  
 5265 Plasma simulation  
 5270 Plasma diagnostic techniques and instrumentation  
 5275 Plasma devices and applications  
 5280 Electric discharges  
 5290 Other topics in plasma physics and electric discharges
- 6000 **CONDENSED MATTER: STRUCTURE,**
- THERMAL AND MECHANICAL PROPERTIES**
- 6100 **STRUCTURE OF LIQUIDS AND SOLIDS; CRYSTALLOGRAPHY**  
 6110 X-ray determination of structures  
 6110D *Theories of diffraction and scattering*  
 6110F *Experimental diffraction and scattering techniques*  
 6110M *Crystal structure solution and refinement techniques*  
 6112 Neutron determination of structures  
 6112B *Theories of diffraction and scattering*  
 6112E *Neutron scattering techniques*  
 6112G *Neutron diffraction techniques*  
 6114 Electron determination of structures  
 6114D *Theories of diffraction and scattering*  
 6114F *Experimental diffraction and scattering*  
 6114H *Low-energy electron diffraction (LEED) and reflection high-energy electron diffraction (RHEED)*  
 6114R *Other electron diffraction and scattering techniques*  
 6116 Other determination of structures  
 6116D *Electron microscopy determinations*  
 6116F *Field-ion microscopy determinations; atom and ion scattering techniques*  
 6116N *EPR and NMR determinations*  
 6116P *Scanning tunnelling microscopy and related techniques*  
 6120 Classical, semiclassical, and quantum theories of liquid structure  
 6125 Studies of specific liquid structures  
 6125M *Liquid metals and liquid alloys*  
 6130 Liquid crystals  
 6140 Amorphous and polymeric materials  
 6140D *Glasses*  
 6140K *Polymers, elastomers, and plastics*  
 6140M *Quasicrystals*  
 6150 Crystalline state  
 6150C *Physics of crystal growth*  
 6150E *Crystal symmetry; models and space groups, and crystalline systems and classes*  
 6150J *Crystal morphology and orientation*  
 6150K *Crystallographic aspects of polymorphic and order-disorder transformations*  
 6150L *Crystal binding*  
 6155 Specific structure of elements and alloys  
 6155D *Nonmetallic elements*  
 6155F *Metallic elements*  
 6155H *Alloys*  
 6160 Specific structure of inorganic compounds  
 6165 Specific structure of organic compounds  
 6170 Defects in crystals  
 6170A *Annealing processes*  
 6170B *Interstitials and vacancies*  
 6170D *Colour centres*  
 6170E *Other point defects*  
 6170G *Dislocations: theory*  
 6170J *Etch pits, decoration, transmission electron microscopy and other direct observations of dislocations*

- 6170L *Slip, creep, internal friction and other indirect evidence of dislocations*
- 6170N *Grain and twin boundaries*
- 6170P *Stacking faults, stacking fault tetrahedra and other planar or extended defects*
- 6170Q *Inclusions and voids*
- 6170R *Crystal impurities: general*
- 6170T *Doping and implantation of impurities*
- 6170W *Impurity concentration, distribution, and gradients*
- 6170Y *Interaction between different crystal structure defects*
- 6180 *Radiation damage and other irradiation effects*
- 6180B *Ultraviolet, visible and infrared radiation*
- 6180C *X-rays*
- 6180E *Gamma rays*
- 6180F *Electrons and positrons*
- 6180H *Neutrons*
- 6180J *Ions*
- 6180L *Atoms and molecules*
- 6180M *Channelling, blocking and energy loss of particles*
- 6190 *Other topics in structure of liquids and solids*
- 6200 **MECHANICAL AND ACOUSTIC PROPERTIES OF CONDENSED MATTER**
- 6210 *Mechanical properties of liquids*
- 6220 *Mechanical properties of solids (related to microscopic structure)*
- 6220D *Elasticity, elastic constants*
- 6220F *Deformation and plasticity*
- 6220H *Creep*
- 6220M *Fatigue, brittleness, fracture, and cracks*
- 6220P *Tribology*
- 6230 *Mechanical and elastic waves*
- 6240 *Anelasticity, internal friction and mechanical resonances*
- 6250 *High-pressure and shock-wave effects in solids*
- 6260 *Acoustic properties of liquids*
- 6265 *Acoustic properties of solids*
- 6280 *Ultrasonic relaxation*
- 6290 *Other topics in mechanical and acoustical properties of condensed matter*
- 6300 **LATTICE DYNAMICS AND CRYSTAL STATISTICS**
- 6310 *General theory*
- 6320 *Phonons and vibrations in crystal lattices*
- 6320D *Phonon states and bands, normal modes, and phonon dispersion*
- 6320H *Phonon-phonon interactions*
- 6320K *Phonon-electron interactions*
- 6320L *Phonon interactions with quasi-particles*
- 6320M *Phonon-defect interactions*
- 6320P *Localized modes*
- 6320R *Anharmonic lattice modes*
- 6350 *Vibrational states in disordered systems*
- 6370 *Statistical mechanics of lattice vibrations*
- 6375 *Statistical mechanics of displacive phase-transitions*
- 6390 *Other topics in lattice dynamics and crystal statistics*
- 6400 **EQUATIONS OF STATE, PHASE EQUILIBRIA, AND PHASE TRANSITIONS**
- 6410 *General theory of equations of state and phase equilibria*
- 6430 *Equations of state of specific substances*
- 6460 *General studies of phase transitions*
- 6470 *Phase equilibria, phase transitions, and critical points*
- 6470D *Solid-liquid transitions*
- 6470F *Liquid-vapour transitions*
- 6470H *Solid-vapour transitions*
- 6470J *Liquid-liquid transitions*
- 6470K *Solid-solid transitions*
- 6470M *Transitions in liquid crystals*
- 6470P *Glass transitions*
- 6470R *Commensurate-incommensurate transitions*
- 6475 *Solubility, segregation, and mixing*
- 6480 *Other phase properties of systems*
- 6490 *Other topics in equations of state, phase equilibria, and phase transitions*
- 6500 **THERMAL PROPERTIES OF CONDENSED MATTER**
- 6520 *Heat capacities of liquids*
- 6540 *Heat capacities of solids*
- 6550 *Thermodynamic properties and entropy*
- 6570 *Thermal expansion and thermomechanical effects*
- 6590 *Other topics in thermal properties of condensed matter*
- 6600 **TRANSPORT PROPERTIES OF CONDENSED MATTER (NONELECTRONIC)**
- 6610 *Diffusion and ionic conduction in liquids*
- 6620 *Diffusive momentum transport*
- 6630 *Diffusion in solids*
- 6630D *Theory of diffusion and ionic conduction in solids*
- 6630F *Self-diffusion in metals, semimetals, and alloys*
- 6630H *Self-diffusion and ionic conduction in nonmetals*
- 6630J *Diffusion, migration, and displacement of impurities*
- 6630L *Diffusion, migration, and displacement of other defects*
- 6630N *Chemical interdiffusion*
- 6630Q *Electromigration*
- 6660 *Thermal conduction in nonmetallic liquids*
- 6670 *Nonelectronic thermal conduction and heat-pulse propagation in nonmetallic solids*
- 6690 *Other topics in nonelectronic transport properties*
- 6700 **QUANTUM FLUIDS AND SOLIDS; LIQUID AND SOLID HELIUM**
- 6720 *Quantum effects on the structure and dynamics of nondegenerate fluids*
- 6740 *Boson degeneracy and superfluidity of helium-4*
- 6750 *Fermi fluids; liquid helium-3*
- 6760 *Mixed systems; liquid helium 3-4 mixtures*
- 6765 *Spin-polarized hydrogen and helium*
- 6770 *Films*

- 6780 Solid helium and related quantum crystals  
 6790 Other topics in quantum fluids and solids (e.g. neutron-star matter)
- 6800 SURFACES AND INTERFACES; THIN FILMS AND WHISKERS  
 6810 Fluid surfaces and interfaces with fluids  
 6815 Liquid thin films  
 6817 Monolayers and Langmuir-Blodgett films  
 6820 Solid surface structure  
 6822 Surface diffusion, segregation and interfacial compound formation  
 6825 Mechanical and acoustical properties of solid surfaces and interfaces  
 6830 Dynamics of solid surfaces and interface vibrations  
 6840 Surface energy of solids; thermodynamic properties  
 6842 Surface phase transitions and critical phenomena  
 6845 Solid-fluid interface processes  
 6848 Solid-solid interfaces  
 6855 Thin film growth, structure, and epitaxy  
 6860 Physical properties of thin films, nonelectronic  
 6865 Layer structures, intercalation compounds and superlattices: growth, structure, and nonelectronic properties  
 6870 Whiskers and dendrites: growth, structure, and nonelectronic properties  
 6890 Other topics in the structure and nonelectronic properties of surfaces and thin films
- 7000 CONDENSED MATTER: ELECTRONIC STRUCTURE, ELECTRICAL, MAGNETIC, AND OPTICAL PROPERTIES
- 7100 ELECTRON STATES  
 7110 General theories and computational techniques  
 7120 Electronic density of states determinations  
 7125 Nonlocalized single-particle electronic states  
 7125C *Techniques of band-structure calculation (general theory, applications of group theory, analytic continuation, etc.)*  
 7125H *Measurement of Fermi surface parameters*  
 7125J *Effective mass and g-factors*  
 7125L *Electron energy states in liquid metals*  
 7125M *Electron energy states in amorphous and glassy solids*  
 7125P *Band structure of crystalline metals*  
 7125R *Band structure of crystalline elemental semiconductors*  
 7125T *Band structure of crystalline semiconductor compounds and insulators*  
 7128 Narrow-band systems, heavy-fermion metals; intermediate-valence solids  
 7130 Metal-insulator transitions  
 7135 Excitons and related phenomena  
 7136 Polaritons  
 7138 Polarons and electron-phonon interactions  
 7145 Collective effects  
 7145G *Exchange, correlation, dielectric and magnetic functions, plasmons*  
 7145J *Fermi-Thomas model*
- 7145L *Charge-density-wave systems*  
 7145N *Calculations of total electronic binding energy*  
 7150 Localized single-particle electronic states  
 7155 Impurity and defect levels  
 7155J *Localization in disordered structures*  
 7165 Positron states  
 7170 Level splitting and interactions  
 7170C *Crystal and ligand fields*  
 7170E *Spin-orbit coupling, Zeeman, Stark and strain splitting*  
 7170G *Exchange interactions*  
 7170J *Nuclear states and interactions*  
 7170M *Other bulk localized states*  
 7190 Other topics in electron states
- 7200 ELECTRONIC TRANSPORT IN CONDENSED MATTER  
 7210 Theory of electronic transport; scattering mechanisms  
 7215 Electronic conduction in metals and alloys  
 7215C *Electrical and thermal conduction in amorphous and liquid metals and alloys*  
 7215E *Electrical and thermal conduction in crystalline metals and alloys*  
 7215G *Galvanomagnetic and other magnetotransport effects*  
 7215H *Thermomagnetic effects*  
 7215J *Thermoelectric effects*  
 7215L *Relaxation times and mean free paths*  
 7215N *Collective modes; low-dimensional conductors*  
 7215Q *Scattering mechanisms and Kondo effect*  
 7215R *Quantum localization*  
 7220 Conductivity phenomena in semiconductors and insulators  
 7220D *General theory, scattering mechanisms*  
 7220F *Low-field transport and mobility; piezoresistance*  
 7220H *High-field and nonlinear effects*  
 7220J *Charge carriers: generation, recombination, lifetime, and trapping*  
 7220M *Galvanomagnetic and other magnetotransport effects*  
 7220N *Thermomagnetic effects*  
 7220P *Thermoelectric effects*  
 7230 High-frequency effects; plasma effects  
 7240 Photoconduction and photovoltaic effects; photodielectric effects  
 7250 Acoustoelectric effects  
 7255 Magnetoacoustic effects  
 7260 Mixed conductivity and conductivity transitions  
 7270 Noise processes and phenomena  
 7280 Conductivity of specific semiconductors and insulators  
 7280C *Elemental semiconductors*  
 7280E *III-V and II-VI semiconductors*  
 7280G *Transition-metal compounds*  
 7280J *Other crystalline inorganic semiconductors*  
 7280L *Organic semiconductors*  
 7280N *Amorphous and glassy semiconductors*  
 7280P *Liquid semiconductors*  
 7290 Other topics in electronic transport in condensed matter

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